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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/979,564	11/14/2001	Hans Bloecher	3926.033	2814

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EXAMINER

ISSING, GREGORY C

ART UNIT	PAPER NUMBER
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3662

DATE MAILED: 02/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/979,564

Applicant(s)

BLOECHER, HANS

Examiner

Gregory C. Issing

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11/19/04.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 11-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11, 16-18 and 20 is/are rejected.
- 7) ☒ Claim(s) 12-15 and 19 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 11, 17 and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Ammar et al.

Ammar et al disclose the claimed subject matter including an antenna array 102 divided into four quadrants, Q1-Q4, each of which is coupled via a 35 GHz amplitude and phase balanced coupler to the beamforming network consisting of a plurality of switches S1-S9, phase shifters 208 and a summing device 210, and sum input 21 and difference input 214. The summing device is envisioned as a Wilkinson divider. The Wilkinson divider is a known in-phase hybrid coupler. The 35 GHz couplers that couple the antenna elements Q1-Q4 to the switches are phase and amplitude balanced and would appear to likewise read on an hybrid coupler.

Applicants argue that Ammar et al only teach a single summing input together with a plurality of switches to select individual antennas whereas the present invention provides a single differential input that is used to select among a plurality of individual antennas. It is not clear what the applicants are arguing for. In order to change patterns in the applicants' system according to the claims and as shown in Figure 3 for example, a different phase shift is switched into one of the feed paths. This is also the way Ammar et al operates; by switching in a different phase, the summing junction couples the signals in different phase portions to generate different differential patterns, e.g. azimuth difference or elevation difference. There is still a single difference port in the form of the receive port 214. Additionally, the Wilkinson divider meets the scope of a hybrid junction in view of the fact that a Wilkinson divider is an in-phase hybrid coupler.

3. Claims 11, 17 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Smith.

4. Smith discloses an antenna array comprising quadrants A, B, C, D wherein the antenna elements are coupled via a feed network to a sum input 82 and a difference input 84 wherein the

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feed network comprises switches 36, 54, hybrid junctions 32, 34, 42, 50, 52, 58 and 80, and phase shifters 45 and 62.

Applicants argue that the prior art fails to show individual antenna elements connected via a network of phase shifters and hybrids and wherein one of the phase shifters or hybrids are switchable. This is not convincing since each of the directional couplers and magic tees in Smith meet the scope of an hybrid junction.

5. Claims 16 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Either Ammar et al or Smith in view of either one of Masak et al or Pierrot.

6. The rejection is set forth in the previous Office Action.

Applicants argue that neither Masak or Pierrot teaches a hybrid junction and therefore does not remedy the alleged deficiency of either one of Ammar or Smith. This is not convincing since each of Ammar et al and Smith are deemed to teach an hybrid junction in the feed network as set forth previously. Applicants also allege that a reasonable expectation of success is not provided by the combination since the secondary references teach cancellation of sidelobes rather than suppression thereof. However, as indicated in the previous office action, if the sidelobes are suppressed they are considered to be suppressed. Thus, applicants' arguments are not convincing.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

8. Foldes (3,9096,508), Figure 7 and col. 5-6, show a switchable beam pattern by controlling phase shifts in a feed network comprising phase shifters and hybrid junctions.

9. Elia et al (3,438,044), Figure 2, adjustable phase delays 87, 89, 91 and 93 may be adjusted by manually changing the settings of the elements or in an electronic/electromechanical manner (col. 5, par. 1). Thus, the monopulse system enables switchable beam patterns via the control of the phase shifters in a feed network comprising phase shifters and hybrid junctions.

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10. Forsberg (3,176,297) is again cited and discloses an antenna array capable of monopulse beamforming wherein a plurality of antenna elements 25 are coupled to a sum input port and a difference input port via a feed network wherein the feed network comprises a plurality of hybrids and phase shifters and wherein the phase shifters are electronically or mechanically switchable so as to provide variously directed beams.

11. Acoraci et al (5,943,011) is again cited and disclose an antenna array for monopulse beamforming including a plurality of antenna elements 51-58 coupled to a sum port 61 and a difference port 63 via a feed network wherein the feed network connects the antenna via a plurality of phase shifters and hybrid circuits and wherein a plurality of switches selectively couples the feed paths so as to exhibit further differential beam patterns.

12. Schmidt et al (4,766,437) disclose an antenna array wherein the directional pattern is controlled including an antenna array comprising antenna elements 10 and 20, phase shifter 27, and hybrid 50 wherein a plurality of switches selectively switch the signal paths in or out of the hybrid so as to generate sum, difference, interferometry, and cosecant squared patterns.

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory C. Issing whose telephone number is 703-306-4156. The examiner can normally be reached on Monday - Thursday 6:00 AM- 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Tarcza can be reached on 703-306-4171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Gregory C. Issing  
Primary Examiner  
Art Unit 3662

gci